AUTORANGING DIGITAL CLAMP METER

MODEL : **DT3150**

INSTRUCTION MANUAL

1. SPECIFICATIONS

1.1 General Specification

Display	■	3¾ digit liquid crystal display (LCD) with a maximum reading of 3999.
Polarity	■	Automatic, positive implied, negative polarity indication.
Overrange	■	(OL) or (-OL) is displayed.
Zero	■	Automatic.
Low battery indication	■	"⊟" is displayed when the battery voltage drops below the operating level.
Measurement rate	■	3 times per second, nominal.
Operating Environment	■	0°C to 50°C at < 70% relative humidity.
Storage Temperature	■	-20°C to 60°C, 0 to 80% R.H. with battery removed from meter.
Power	■	Two 1.5V 'AAA' Size Battery
Battery life	■	200 hours typical
Dimensions	■	247 x 76 x 39mm (approx.)
Weight	■	465gms including battery (approx.)
Accessories	■	Pair of test leads x 1, instruction manual x 1, 1.5V batterys (installed) x 2, carring case x 1
Maximum Jaw Opening	■	Can measure round cables upto 43mm dia & Flats (Bus Bar) 65mm x 16mm

1.2 Electrical Specification

Accuracies are ± (% reading + number of digits) at 27 ± 5°C and humidity of less than 75% RH.

AC CURRENT (50-60Hz)

Range	Accuracy	Overload Protection
40A	**±(3% + 4dgt)**	**1000A AC Max. for 1 minute**
400A / 1000A	**±(2% + 4dgt)**	

DC VOLTAGE (Auto Ranging)

Ranges : 4V, 40V, 400V, 1000V

Accuracy : ± (0.5% rdg + 4 dgt) on 4V
± (0.7% rdg + 4 dgt) on 40V & 400V
± (1% of rdg + 4 dgt) on 1000V

Resolution : 1mV to 1V

Input Impedance : 10MV on all ranges except, 11MV on 4V

Overload Protection : 1200V DC/800V AC

AC VOLTAGE (Auto Ranging) 40-500Hz

Range : 4V, 40V, 400V, 750V

Accuracy : ± (1.0% rdg + 8 dgt) on all ranges except,
± (1.5% rdg + 8 dgt) on 750V

Resolution : 1mV to 1V

Input Impedance : 10MV on all ranges except, 11MV on 4V

Overload Protection : 1200V DC/800V AC

RESISTANCE (Auto Ranging)

Range : 400V, 4KV, 40KV, 400KV, 4MV, 40MV

Accuracy : ± (0.7% rdg + 4 dgt) on all ranges except
± (1.2% of rdg + 4 dgt) on 4MV
± (2.5% of rdg + 4 dgt) on 40MV

Resolution : 0.1V to 0.01MV

Test Current : 0.7mA on 400V, 0.1mA on 4KV,
30µA on 40KV, 4µA on 400KV

Overload Protection : 500V DC/AC

Continuity Check

Threshold Level : 40V Approx.

Response Time : 1m Sec. Approx.

Open Circuit Voltage : 0.4V Approx.

Indication : '•))' is displayed on LCD and buzzer sounds at continuity.

Overload Protection : 500V DC / AC

Diode Test

Measurement Current : 1.0 ± 0.6 mA Approx.

Open Circuit Voltage : 1.5V Approx.

Overload Protection : 500V DC / AC

Frequency (Auto Ranging)

Range : 10.00Hz, 50.00Hz, 500.0Hz, 5.000kHz, 50.00kHz, 500.0kHz

Accuracy : ± (0.5% rdg + 2 dgt)

Sensitivity : 3V

Overvoltage Protection : 200V DC or AC peak

% Duty Cycle (Auto Ranging)

Range : 1% to 90%

Accuracy : ± (0.5% rdg + 5 dgt)

Resolution : 0.1%

Overvoltage Protection : 200V DC or AC peak

Capacitance (Auto Ranging)

Range : 40nf, 400nf, 4㎌, 40㎌, 100㎌

Accuracy : ± (5% rdg + 10 dgt)

Resolution : 0.01nf to 0.1㎌

3150 : 28-09-2012

2. OPERATION

Before taking any measurements, read the safety information section. Always examine the instrument for damage, contamination (excessive dirt, grease, etc.) and defects. Examine the test leads for cracked or frayed insulation. If any abnormal conditions exist do not attempt to make any measurements.

SELECT BUTTON

In ACV Range it will select ACV / Hz/Duty function. In V / →|← / •)) range it will select resistance or diode or countinuity function. In Hz it will select Hz/Duty function.

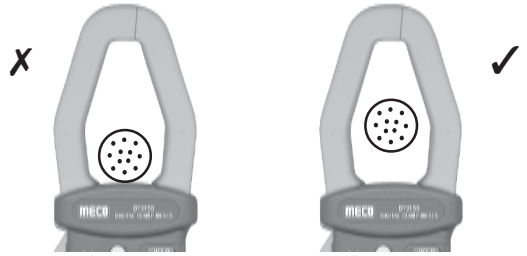
DATA HOLD BUTTON

Press Data Hold button to toggle in and out of Data Hold mode, In the Data Hold mode, the " H " annunciator is displayed.

2.1 Current Measurements

1. Set the Function / Range switch to the highest 1000A AC range.
2. Press the trigger to open transformer jaws, clamp onto one conductor only and release trigger. Jaws should be completely closed. Read the current directly on the display. It is recommended that the conductor be placed at th e center of the closed jaws for maximum accuracy (Fig. - 1).

Fig. 1



3. When the reading is lower than 400 counts, set the range switch to the next lower range position. For maximum accuracy, select the lowest range possible without over ranging the meter.

2.2 Voltage Measurements

1. Connect the red test lead to the "VV" jack and the black test lead to the "COM" jack.
2. Set the Function/Range switch to the desired Voltage type (AC or DC)
3. Connect the test leads to the device or circuit being measured.
4. For DC, a (-) sign is displayed for negative polarity; positive polarity is implied.

2.3 Resistance Measurements

1. Connect red test lead to the "VV" jack and black test lead to the "COM" jack.
2. Set function / Range switch to V / →|← / •)) position.
3. If the resistance being measured is connected to a circuit, turn off power to the circuit being tested and discharge all capacitors.
4. Connect test leads across the resistance being measured. When measuring high resistance, be sure not to contact adjacent points even if insulated because some insulators have a relatively low insulation resistance, causing the measured resistance to be lower than the actual resistance.
5. Read resistance value on digital display. If a high resistance vaiue is shunted by a large value of capacitance allow display to stabilize.

2.4 Diode Test

1. Connect the red test lead to the "VV" jack and black test lead to the " COM " jack.
2. Set the Function / Range switch to the V / →|← / •)) position, select "→|←" by pressing select key.
3. Turn off power to the circuit under test.

4. Touch probes to the diode. A forward-voltage drop is about 0.6V (typical for a silicon diode).
5. If the digital display reads overrange " OL ", reverse the lead connections. The placement of the test leads when the forward reading is displayed indicates the orientation of the diode. The red lead is positive and the black lead is negative. If overrange " OL " is displayed with both lead connections, the junction is open. If a low reading (less than 1000) is obtained with both lead connections, the junction is shorted internally or (if junction is measured in a circuit) the junction is shunted by a resistance less than 1KV. In the letter case the junction must be disconnected from the circuit in order to verify its operartion.

2.5 Continuity Measurement

In continuity test, the beeper sounds continuously, if the resistance is less than 40V.

2.6 Frequency & Duty Cycle Measurement

There are 2 positions for Frequency & Duty cycle measurements.
a) "Hz" position (Not for line frequency measurement.)
b) "ACV" position (for line frequency measurement.)

2.6a "Hz" position (Not for line frequency measurement.)

Sensitivity	:	3V
Frequency Range	:	10Hz to 500kHz
Duty Cycle	:	1% to 90%
Overvoltage Protection	:	200V DC or AC peak

1. Connect test lead to "Hz" and "COM" terminal.
2. Set rotary switch to "Hz" posotion.
3. Select Frequency or Duty cycle by pressing "Select" key.
4. Connect the test leads across the source or load under measurement.

2.6b "ACV" position (For line frequency measurement.)

Sensitivity	:	2V
Frequency Range	:	40Hz to 500Hz
Duty Cycle	:	10% to 90%
Overvoltage Protection	:	1000V DC or 750V AC peak

1. Connect test lead to "VV" and "COM" terminal.
2. Set rotary switch to "ACV" posotion.
3. Select Frequency or Duty cycle by pressing "Select" key.
4. Connect the test leads across the source or load under measurement.

2.7 Capacitance measurement

1. Set function/Range Switch to " ⊣⊢ " position
2. Short the leads of the capacitor to be tested togather to ensure that there is no charge on the capacitor.
3. Insert the capcitor leads into the capacitor test socket.
4. Read the capacitance value in the display.

3. MAINTENANCE

WARNING

Remove test leads before changing battery or servicing.

Battery Replacement

Power is supplied by two 1.5V 'AAA' size battery or Equivalent.

The " [+ -] " appears on the LCD display when replacement is needed. To replace the battery, remove the screw from the battery cover and lift off the battery case. Remove the batterys & repleced with new batterys.

4. SAFETY INFORMATION

The following safety information must be observed to ensure maximum personal safety during the operation of this meter:

1. Do not use the meter if the meter or test leads look damaged, or if you suspect that the meter is not operating properly.
2. This Clamp Meter is designed to take current measurements on circuits with a maximum voltage difference of 500VAC between any conductor and ground potential. Using the instrument for current measurements on circuits above this voltage may cause electric shock, instrument damage or damage to the equipment under test.

   Before measuring current make certain the test leads are removed from the instrument.
3. The instrument is protected for overload upto 500 VAC for 1 minute. Do not take current readings on circuits where the maximum current potential is not known.

   Do not exceed the maximum currents that this instrument is designed to measure.
4. Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous.
5. Use caution when working above 60V DC or 30V AC rms. Such voltages pose a shock hazard.
6. When using the probes, keep your fingers behind the finger guards on the probes.
7. Measuring voltage which exceeds the limits of the clamp meter may damage the meter and expose the operator to a shock hazard. Always recognize the meter voltage limits as stated on the front of the meter.

NOTE

NOTE

MECO®

CERTIFICATE OF CALIBRATION

We hereby certify that this product has been calibrated and found to be in accordance with the applicable SPECIFICATIONS and MECO STANDARDS.

Accuracies of the standard equipment used in this calibration are traceable to the National Standards.

MECO METERS PVT. LTD.

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E-mail : sales@mecoinst.com **Web :** www.mecoinst.com

SR. NO : _____

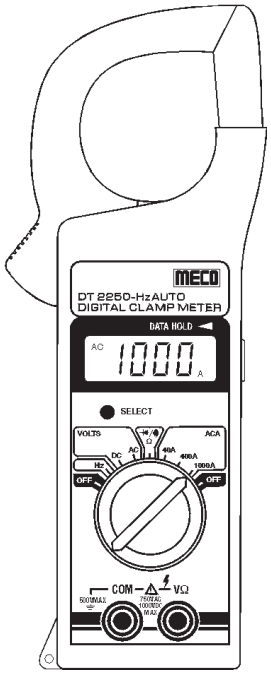
CHECKED BY : _____

DATE : _____

MODEL NO : _____

AUTORANGING DIGITAL CLAMP METER

MODEL : **2250-Hz** AUTO



INSTRUCTION MANUAL

1. SPECIFICATIONS

1.1 General Specification

Display	■	3¾ digit liquid crystal display (LCD) with a maximum reading of 3999.
Polarity	■	Automatic, positive implied, negative polarity indication.
Overrange	■	(OL) or (-OL) is displayed.
Zero	■	Automatic.
Low battery indication	■	"[+-]" is displayed when the battery voltage drops below the operating level.
Measurement rate	■	3 times per second, nominal.
Operating Environment	■	0°C to 50°C at < 70% relative humidity.
Storage Temperature	■	-20°C to 60°C, 0 to 80% R.H. with battery removed from meter.
Accuracy	■	Stated accuracy at 27^0C ± 5^0C, <75% relative humidity.
Power	■	Two 1.5V 'AAA' Size Battery
Battery life	■	200 hours typical
Dimensions	■	250 x 98 x 35mm (approx.)
Weight	■	400gms including battery (approx.)
Accessories	■	Pair of test leads x 1, instruction manual x 1, 1.5V batterys (installed) x 2, Carring Case x 1
Maximum Jaw Opening	■	55mm

1.2 Electrical Specification

Accuracies are ± (% reading + number of digits) at 27 ± 5°C and humidity of less than 75% RH.

AC CURRENT (50-60Hz)

Range	Accuracy	Overload Protection
40A	**±(3% + 4dgt)**	**1000A AC Max. for 1 minute**
400A / 1000A	**±(2% + 4dgt)**	

DC VOLTAGE (Auto Ranging)

Ranges : 4V, 40V, 400V, 1000V

Accuracy : ± (0.5% rdg + 4 dgt) on 4V
± (0.7% rdg + 4 dgt) on 40V & 400V
± (1% of rdg + 4 dgt) on 1000V

Resolution : 1mV to 1V

Input Impedance : 10MV on all ranges except, 11MV on 4V

Overload Protection : 500V DC/350V AC for 15 sec. on 4V range, 1200V DC/800V AC on all other ranges.

AC VOLTAGE (Auto Ranging) 40-500Hz

Range : 4V, 40V, 400V, 750V

Accuracy : ± (1.0% rdg + 8 dgt) on all ranges except, ± (1.5% rdg + 8 dgt) on 750V

Resolution : 1mV to 1V

Input Impedance : 10MV on all ranges except, 11MV on 4V

Overload Protection : 500V DC/350V AC for 15 sec. on 4V range, 1200V DC/800V AC on all other ranges.

RESISTANCE (Auto Ranging)

Range : 400V, 4KV, 40KV, 400KV, 4MV, 40MV

Accuracy : ± (0.7% rdg + 4 dgt) on all ranges except ± (1.2% of rdg + 4 dgt) on 4MV ± (2.5% of rdg + 4 dgt) on 40MV

Resolution : 0.1V to 0.01MV

Test Current : 0.7mA on 400V, 0.1mA on 4KV, 30µA on 40KV, 4µA on 400KV

Overload Protection : 500V DC/AC

Continuity Check

Threshold Level : 40V Approx.

Response Time : 1m Sec. Approx.

Open Circuit Voltage : 0.4V Approx.

Indication : '•))' is displayed on LCD and buzzer sounds at continuity.

Overload Protection : 500V DC / AC

Diode Test

Measurement Current : 1.0 ± 0.6 mA Approx.

Open Circuit Voltage : 1.5V Approx.

Overload Protection : 500V DC / AC

Frequency (Auto Ranging)

Range : 10.00Hz, 50.00Hz, 500.0Hz, 5.000kHz, 50.00kHz, 500.0kHz

Accuracy : ± (0.5% rdg + 2 dgt)

Sensitivity : 3V

Overvoltage Protection : 200V DC or AC peak

% Duty Cycle (Auto Ranging)

Range : 1% to 90%

Accuracy : ± (0.5% rdg + 5 dgt)

Resolution : 0.1%

Overvoltage Protection : 200V DC or AC peak

2. OPERATION

Before taking any measurements, read the safety information section. Always examine the instrument for damage, contamination (excessive dirt, grease, etc.) and defects. Examine the test leads for cracked or frayed insulation. If any abnormal conditions exist do not attempt to make any measurements.

SELECT BUTTON

In ACV Range it will select ACV / Hz/Duty function. In V /⏭/•)) range it will select resistance or diode or countinuity function. In Hz it will select Hz/Duty function.

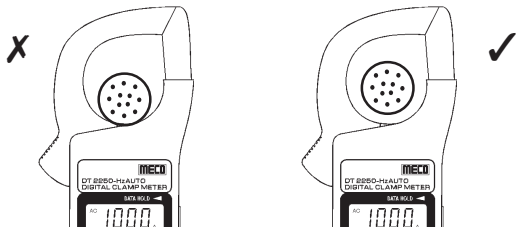
DATA HOLD BUTTON

Press Data Hold button to toggle in and out of Data Hold mode, In the Data Hold mode, the " H " annunciator is displayed.

2.1 Current Measurements

1. Set the Function / Range switch to the highest 1000A AC range.
2. Press the trigger to open transformer jaws, clamp onto one conductor only and release trigger. Jaws should be completely closed. Read the current directly on the display. It is recommended that the conductor be placed at the center of the closed jaws for maximum accuracy (Fig. - 1).

Fig. 1



3. When the reading is lower than 400 counts, set the range switch to the next lower range position. For maximum accuracy, select the lowest range possible without over ranging the meter.

2.2 Voltage Measurements

1. Connect the red test lead to the "VV" jack and the black test lead to the "COM" jack.
2. Set the Function/Range switch to the desired Voltage type (AC or DC)
3. Connect the test leads to the device or circuit being measured.
4. For DC, a (-) sign is displayed for negative polarity; positive polarity is implied.

2.3 Resistance Measurements

1. Connect red test lead to the "VV" jack and black test lead to the "COM" jack.
2. Set function / Range switch to V /⏭/•)) position.
3. If the resistance being measured is connected to a circuit, turn off power to the circuit being tested and discharge all capacitors.
4. Connect test leads across the resistance being measured. When measuring high resistance, be sure not to contact adjacent points even if insulated because some insulators have a relatively low insulation resistance, causing the measured resistance to be lower than the actual resistance.
5. Read resistance value on digital display. If a high resistance value is shunted by a large value of capacitance allow display to stabilize.

2.4 Diode Test

1. Connect the red test lead to the "VV" jack and black test lead to the " COM " jack.
2. Set the Function / Range switch to the V /⏭/•)) position, select "⏭" by pressing select key.
3. Turn off power to the circuit under test.

4. Touch probes to the diode. A forward-voltage drop is about 0.6V (typical for a silicon diode).
5. If the digital display reads overrange " OL ", reverse the lead connections. The placement of the test leads when the forward reading is displayed indicates the orientation of the diode. The red lead is positive and the black lead is negative. If overrange " OL " is displayed with both lead connections, the junction is open. If a low reading (less than 1000) is obtained with both lead connections, the junction is shorted internally or (if junction is measured in a circuit) the junction is shunted by a resistance less than 1KV. In the letter case the junction must be disconnected from the circuit in order to verify its operartion.

2.5 Continuity Measurement

In continuity test, the beeper sounds continuously, if the resistance is less than 40V.

2.6 Frequency & Duty Cycle Measurement

There are 2 positions for Frequency & Duty cycle measurements.
a) "Hz" position (Not for line frequency measurement.)
b) "ACV" position.

2.6a "Hz" position (Not for line frequency measurement.)

Sensitivity	: 3V
Frequency Range	: 10Hz to 500kHz
Duty Cycle	: 1% to 90%
Overvoltage Protection	: 200V DC or AC peak

1. Connect test lead to "VV" and "COM" terminal.
2. Set rotary switch to "Hz" posotion.
3. Select Frequency or Duty cycle by pressing "Select" key.
4. Connect the test leads across the source or load under measurement.

2.6b "ACV" position (For line frequency measurement.)

Sensitivity	: 2V
Frequency Range	: 40Hz to 500Hz
Duty Cycle	: 10% to 90%
Overvoltage Protection	: 1000V DC or 750V AC peak

1. Connect test lead to "VV" and "COM" terminal.
2. Set rotary switch to "ACV" posotion.
3. Select Frequency or Duty cycle by pressing "Select" key.
4. Connect the test leads across the source or load under measurement.

3. MAINTENANCE

WARNING

Remove test leads before changing battery or servicing.

Battery Replacement

Power is supplied by two 1.5V 'AAA' size battery or Equivalent.

The " ⊞ " appears on the LCD display when replacement is needed. To replace the battery, remove the screw from the battery cover and lift off the battery case. Remove the batterys & repleced with new batterys.

4. SAFETY INFORMATION

The following safety information must be observed to ensure maximum personal safety during the operation of this meter:

1. Do not use the meter if the meter or test leads look damaged, or if you suspect that the meter is not operating properly.
2. This Clamp Meter is designed to take current measurements on circuits with a maximum voltage difference of 500VAC between any conductor and ground potential. Using the instrument for current measurements on circuits above this voltage may cause electric shock, instrument damage or damage to the equipment under test.

Before measuring current make certain the test leads are removed from the instrument.

3. The instrument is protected for overload upto 500 VAC for 1 minute. Do not take current readings on circuits where the maximum current potential is not known.

   Do not exceed the maximum currents that this instrument is designed to measure.

4. Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous.

5. Use caution when working above 60V DC or 30V AC rms. Such voltages pose a shock hazard.

6. When using the probes, keep your fingers behind the finger guards on the probes.

7. Measuring voltage which exceeds the limits of the clamp meter may damage the meter and expose the operator to a shock hazard. Always recognize the meter voltage limits as stated on the front of the meter.

MECO®

CERTIFICATE OF CALIBRATION

We hereby certify that this product has been calibrated and found to be in accordance with the applicable SPECIFICATIONS and MECO STANDARDS.

Accuracies of the standard equipment used in this calibration are traceable to the National Standards.

MECO METERS PVT. LTD.

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Fax : 0091-22-27673310, 27673330

E-mail : sales@mecoinst.com **Web :** www.mecoinst.com

SR. NO : _____

CHECKED BY : _____

DATE : _____

MODEL NO : _____

NOTE

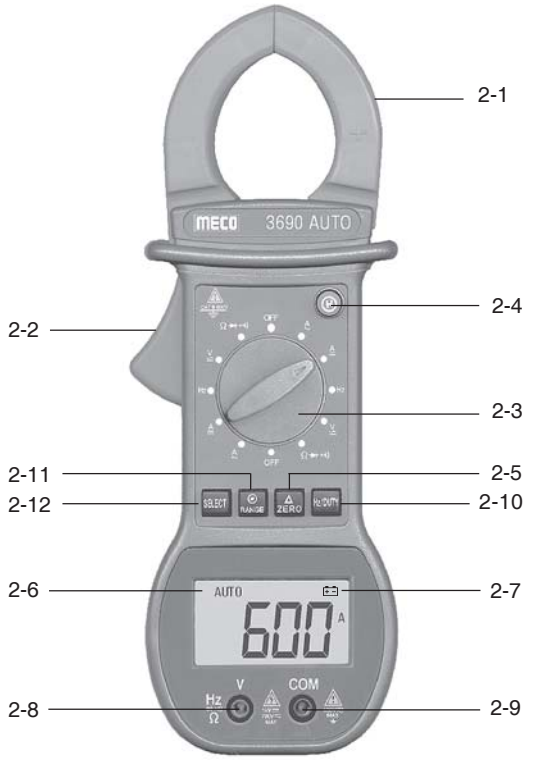
NOTE

DC / AC CLAMP METER

MODEL : 3690AUTO

USER MANUAL

FRONT PANEL CONTROLS



2-1 Transformer Jaw : This is used to sense the current signal. To measure DC/AC current, conductor must be enclosed by the jaw.

2-2 Transformer Trigger : This is used to open the jaw.

2-3 Function selector switch : This is use to select the function user desired such as DCA, ACA, $\underline{\overset{V}{\sim}}$, ohm, continuity, diode and Hz.

2-4 Data Hold Button

2-5 Zero Button

2-6 LCD : This is a 3¾ digit liquid crystal display with maximum indication of 4000 counts.

2-7 Low Battery Symbol : When this Symbol appears, it means the battery voltage drops below the minimum required voltage. Refer to section V for battery replacement.

2-8 VV, Hz, →|←, •))) Input Terminal : This terminal is used as input for voltage, ohm, continuity, diode and frequency measurement.

2-9 COM Terminal : This terminal is used as common reference input.

2-10 Hz / Duty Button

2-11 Range Button

2-12 Select Button

1. SPECIFICATIONS

1.1 General Specifications

Display	:	3¾ digit liquit crystal display (LCD) Max reading 3999 counts
Polarity	:	Automatic, Positive implied, (-) negative polarity indication
Zero adjustment	:	Automatic
Over range indication	:	"OL" or "-OL"
Low battery	:	" [+ −] " mark turns on.
Sample rate	:	3 times per second, nominal
Operating conditions	:	O^0C to +50^0C at > 75% RH (Noncondensing)
Storage conditions	:	-20^0C to +60^0C, 80% RH with battery removed
Accuracy	:	Accuracy specification at 27^0C ± 5^0C less than 75% RH.
Power Supply	:	Two 1.5 V AAA size battery
Battery Life	:	150 hours typical with carbon zinc
Dimensions	:	215 x 80 x 40 mm (approx.)
Weight	:	280gms including battery (approx.)
Accessories	:	Pair of test leads x 1, 1.5V AAA battery (installed) x 2, Instruction manual x 1, Carrying Case x 1
Max. Jaw Opening	:	30mm

1.2 Electrical Specification

DC CURRENT : (Auto Ranging)

Range	Accuracy	Overload Protection
400A	± (1.5% rdg ± 5 dgts)	600A DC Max. for 1 minute
600A	± (2.0% rdg ± 5 dgts)	

AC CURRENT : (Auto Ranging)

Range	Accuracy		Overload Protection
	50 - 60Hz	40 - 500Hz	
400A	± (1.75% rdg ± 5 dgts)	± (3.5% rdg ± 5 dgts)	600A AC Max. for 1 minute.
600A			

AC Voltage (Auto Ranging)

Range : 4V, 40V, 400V, 600V

Resolution : 1mV to 1V

Accuracy : ± (1.2 % rdg + 4 dgts) on 50 - 60 Hz
± (2% rdg + 25 dgts) on 40 - 500Hz
± (4% rdg +5dgts) on 600v

Input impedance : >10MV

Over load protection : 600V DC or 600V AC rms.

DC Voltage (Auto Ranging)

Range : 400mV, 4V, 40V, 400V, 600V

Resolution : 0.1mV to 1V

Accuracy : ± (0.5 % rdg + 8 dgts) on 400mV to 400V
± (0.7 % rdg +2 dgts) on 600V

Input impedance : >10MV

Over load protection : 600V DC or 600V AC rms.

Resistance (Auto Ranging)

Range : 400V, 4KV, 40KV, 400KV, 4MV, 40MV

Resolution : 0.1V to 0.01MV

Accuracy : ± (0.75% rdg + 8 dgts) on 400V to 400KV
± (1.0 % rdg +6 dgts) on 4MV
± (2-0 % rdg +4 dgts) on 40MV

Open Circuit Volts : 0.4V DC

Over load protection : 600V DC or AC rms.

Diode test

Test Current : 1.0 mA ± 0.6 mA

Accuracy : ± 3.0% rdg + 3 dgts

Open circuit volts : 3.0V DC typical.

Overload protection : 600V DC or AC rms.

Continuity

Audiable indication : less than 40V ± 20V

Overload protection : 600V DC or AC rms.

Frequency (Auto Ranging)

Ranges : 100Hz, 1KHz, 10KHz, 100KHz, 500KHz

Resolution : 0.1 Hz to 0.1 KHz

Accuracy : ± (0.3 % rdg + 2 dgts)

Sensitivity : 3.0V rms min.

Effect reading : 10 - 9999

Overload protection : 200V DC or AC rms.

% Duty Cycle (Auto Ranging)

Range : 1% to 90 %

Accuracy : ± (0.5 % rdg + 5 dgts)

Resolution : 0.1 %

Overload protection : 200V DC or AC rms.

2. OPERATION

1. Before taking any measurements, read the safety information section. Always examine the instrument for deamage, contamination (excessive dirt, grease, etc.) and defeets. Examine the test leads for cracked or frayed insulation. If any abnormal conditions exist do not at ettempt to make any measurement.
2. **Data Hold Button :**

   Press data hold button to toggle in and out of data hold mode, in the data hold mode, the " HOLD " annunciator is displayed.
3. **Select Button :**

   In V≅ Range it will select DCV or ACV function in V, →|, •))) range it will select resistance or diode or continuity function.
4. **Range Button :**

   Press (Range) button to select the manual range mode and turn off the 'Auto' annunciator (The meter remains in the range it was in when manual ranging was selected).

   In the manual range mode. Each time you press (Range) button, the range (and the input range annunciator) in crements and a new value is displayed. To exit the manual range mode and return to autoranging, press and hold down (Range) button for 2 seconds. The 'auto' annunciator turns back on.
5. **D Zero Button :**

   Press (D zero) button to enter the relative mode the 'D zero' annunciator turn on zero the display, and store the displayed reading as a refrenece value, press and hold down the (D zero) button for 2 seconds to exit the reative mode.
6. **Hz / Duty Button :**

   In ACV range it will select ACV / HZ / Duty function in Hz range it will select Hz / Duty function.

A. **DC/AC Current Measurements.**

7. **WARNING :** Make sure that all the test leads are disconnected from the meter's terminal for current measurement.
8. **DC Current :**
   a) Set the rotary switch at DCA range.
   b) Push the zero button to stop the reading at zero for one second If the reading is not stopped at zero, release the button a while and push it again.
   c) Press the trigger to open the jaw and fully enclose the conductor to be mesured. No air gap is allowed between the two half jaws.
   d) Read the measured value from the LCD display.
   e) Make sure that the offset value caused by the residual magetism is still removed. If the new offset value is produced, remove it with the zero button and make a new measurement again according to the "c" & "d". (If the current to be measured is larger than the current measured before, or the direction of current changes. the new offset value will be produced.)
9. **AC Current :**
   a) Set the Function/Range switch to the ACA range.
   b) Press the trigger to open transformer jaws, clamp onto completely closed,Read the current directly on the display, It is recommended that the conductor be placed at the center of the close jaws for maximum accuracy.

B. **DC/AC Voltage Measurements.**

10. **WARNING :** Maximum input for DCV is 600V and for ACV is 600V Do not attempt to take any voltage measurement that exceeds the limits. Exceeding the limits could couse electrical shock and damage to the clamp meter.

11. **DC Voltage :**
    a) Set the rotary switch at $\underset{\sim}{V}$ range.
    b) Insert the testleads into the input jack.
    c) Connect the test probe in parallel to the circuit to be measured.
    d) Read the measured value from the LCD display.
12. **AC Voltage :**
    a) Set the rotary switch at $\underset{\sim}{V}$ range
    b) Select ACV by pressing selcet button .
    c) Insert the test tead in to the input jack.
    d) Connect the test probe in parallel to the circuit to be measured.
    e) Read the measured value form the LCD display.

WARNING : Before taking any in-circuit resistance measurement remove power from the circuit being tested and discharge all the capacitors.

13. **Resistance :**
    a) Set the rotary switch at V, →|, •))) range.
    b) Insert the test lead in to the input jack.
    c) If the resistance being measured is connected to a circuit, turn off power to the circuit being tested and discharge all the capacitors.
    d) Connect test lead across the resistance being measured. When meansuring high resistance, be sure not contact adjacent points even if insulated because some insulator have a relatively low insulation resistance, causing the measured resistance to be lower than the actual resistance.
    e) Read resistance value on digital display. If a high resistance value is shunted by a large value of capacitace allow display to stabilize.

14. **Diode :**
    a) Set the rotary switch at V, →|, •))) range.
    b) Select →| by pressing select button.
    c) Insert the test lead in to the input jack.
    d) Turn off power to the circuit under test.
    e) Touch probes to the diode A forward voltage drop is about 0.6V (typical for a silicon diode)
    f) If the digital display reads over range "OL" reverse the lead connections. The placement of the test leads when the forweard reading is displayed indicates the orientation of the diode. The red lead is positive and the black lead is negative. If overrange "OL" is display with both lead connection, the juction is open, if a low reading (less than 1000) is obtained with both lead conncetion, the junction is shorted internally or (if junction is measured in a circuit) the junction is shunted by a resistance less than 1kV in the letter case the junction must be disconnected form the circuit in order to verify its opertion.
15. **Continuty :**
    a) Set the rotary switch at V, →|, •))) range.
    b) Select •))) by pressing select button.
    c) Insert the test lead in to the input jack.
    d) Connect the test lead to the test points the beeper sounds conninuosly. If the resistance is less than 40V
16. **Frequency :**
    a) Set the rotary switch at Hz range.
    b) Insert the test lead in to the input jack.
    c) Connect the test lead to the points of measurement and read the frquency form the display.

17. **Duty Cycle :**
    a) Set the rotary switch at Hz range.
    b) Select duty cycle by pressing Hz / Duty button.
    c) Insert the test lead in to the input jack.
    d) Conncet the test lead to the points of measured and read duty cycle from the display
18. **Frequency & Duty Cycle measurement :**

    There are 2 positions for frequency & duty cycle measurment.
    a) 'Hz' position (not for line frequency measurement)
    b) 'ACV' position (for line frequency measurement)

a) 'Hz' position (not for line frequency measurment)

Sensitivity : 3V

Frequency range : 100 Hz to 500KHz

Duty cycle : 1% to 90 %

Overload protection : 200V DC or AC peak

1) Set the rotary switch at Hz
2) Connect test lead in to the input jack.
3) Select frequency or duty cycle by pressing 'Hz / Duty' button.
4) Connect the test leads across the source or load under measurement

b) 'ACV' position (for line frequency, measurement).

Sensitivity : 2V

Frequency range : 40 Hz to 500Hz

Duty cycle : 10% to 90%

Overload protection : 600V DC or 600V AC rms.

1) Set the rotary switch at $\underset{\sim}{V}$
2) Connect test lead in to the input jack.

3) Select ACV range by pressing select button.
4) Select frequency or duty cycle by pressing 'Hz / Duty' button.
5) Connect the test leads across the source or load under measurment.

3. MAINTENANCE

WARNING :

Remove test leads before changing battery performing any servicing. Never operate instrument unless bottom cover is closed.

TROUBLE SHOOTING

If there appears to be s malfunction during the operation of the meter, the following steps should be performed in order to isolate the cause of the problem :

1. Check the battery.
2. Review the operating instructions for possible mistakes in operating procedure
3. Inspect and test the Test Probes for a broken or intermittent connection.

BATTERY REPLACEMENT

When the low battery symbol is displayed on LCD, replace the old battery with new battery.

A. Turn the power off and remove the test leads from the clamp meter.
B. Remove the screw of the battery compartment.
C. Slide off the battery compartment.
D. Remove the old battery
E. Insert new battery.
F. Replace the battery compartment and secure the screw.

PRECAUTION

1. Observe all safety rules while making measurements. CAUTION should be exercised when making measurements since dangerous voltages can be present in normally safe circuit or areas.
2. If this instrument is NOT going to be operated for an extended period remove the battery since damage can result from leakage.

4. SAFETY RULES

The following safety information must be observed to ensure maximum personal safety during the operation of this meter

1. Do not use the meter if the meter or test leads look damaged. or if you suspect that the meter is not operating properly.
2. This clamp meter is designed to take current measurements on circuit with a maximum voltage difference of 500VAC between any conductor and ground potential. Using the instrument for current measurements on circuit above this voltage may cause electric shock, instrument damage or damage to the equipment under test.
3. Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Small amounts of current can be dangerous.
4. Use caution when working above 60V DC or 30V AC rms. Such Voltages pose a shock hazard.
5. When using the probes, keep your fingers behind the finger guards on the probes.
6. Measuring voltage which exceeds the limits of the clamp meter may damage the meter and expose the operator to a shock hazard.

   Always recognize the meter voltage limits as stated on the meter.

NOTE

NOTE

MECO®

Certificate of Calibration

We hereby certify that this product has been calibrated and found to be in accordance with the applicable SPECIFICATIONS and STANDARDS.

Accuracies of the standard equipment used in this calibration are traceable to the National Standards.

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SR. NO. : _____

CHECKED BY : _____

DATE : _____

MODEL NO. : _____

3690AUTO : 28-09-2012